What is claimed is:

1. A computer readable medium containing executable program
instructions for performing a method on a computer connected to a network comprising
the steps of:

receiving network topology information as an input;

receiving network traffic demand information as an input;

constructing a data model of a packet-switched network from the network
topology information and network traffic demand information wherein the data model
further comprises data objects for network nodes, network links, and for network traffic
demands; and

constructing a routing model wherein the data objects for network nodes,
network links, and for network traffic demands are utilized to simulate network traffic in
the packet-switched network.

2. The computer readable medium of claim 1 wherein the network
topology information is derived from data obtained from an operational packet-switched
network.

3. The computer readable medium of claim 2 wherein the data is
extracted from router configuration files.

4. The computer readable medium of claim 2 wherein the data is
extracted utilizing end-to-end query mechanisms.

1   5.   The computer readable medium of claim 1 wherein the network

2   topology information is derived from a proposed topology design.

1   6.   The computer readable medium of claim 1 wherein the network traffic

2   demand information is derived from data obtained from an operational packet-switched

3   network.

1   7.   The computer readable medium of claim 6 wherein the data is

2   extracted from traffic measurements collected at ingress routers.

1   8.   The computer readable medium of claim 7 wherein the traffic

2   measurements are made between an ingress link and a set of egress links.

1   9.   The computer readable medium of claim 8 wherein the traffic

2   measurements are collected by associating one or more destination network addresses

3   with the set of egress links.

1   10. The computer readable medium of claim 9 wherein the set of egress

2   links is identified by extracting reachability information from network forwarding tables.

1   11. The computer readable medium of claim 9 wherein the set of egress

2   links is identified by extracting reachability information from BGP tables.

1   12. The computer readable medium of claim 9 wherein the set of egress

2   links is identified by extracting reachability information from network configuration files.

1   13. The computer readable medium of claim 1 wherein the network traffic

2   demand information is derived from estimates of projected network traffic demand.

1   14. The computer readable medium of claim 1 wherein the network traffic

2 demand information is derived from customer subscription information.

1   15. The computer readable medium of claim 1 further comprising the step

2 of providing an interface to the data model that graphically displays the network nodes,

3 network links and network traffic calculated by the routing model.

1   16. The computer readable medium of claim 1 wherein the routing model

2 simulates the OSPF routing protocol.

1   17. The computer readable medium of claim 1 wherein the routing model

2 simulates the IS-IS routing protocol.

1   18. A method of traffic engineering in a packet-switched network

2 comprising the steps of:

3   retrieving network topology information;

4   retrieving traffic measurement information;

5   constructing a data model of a packet-switched network from the network

6 topology information and network traffic information wherein the data model further

7 comprises data objects for network nodes, network links, and for network traffic

8 demands; and

9   constructing a routing model wherein the data objects for network nodes,

10 network links, and for network traffic demands are utilized to simulate network traffic in

11 the packet-switched network.

1   19. The method of claim 18 wherein the network topology information is

2   derived from data obtained from an operational packet-switched network.

1   20. The method of claim 19 wherein the data is extracted from router

2   configuration files.

1   21. The method of claim 19 wherein the data is extracted utilizing end-to-

2   end query mechanisms.

1   22. The method of claim 18 wherein the network topology information is

2   derived from a proposed topology design.

1   23. The method of claim 18 wherein the network traffic demand

2   information is derived from data obtained from an operational packet-switched network.

1   24. The method of claim 23 wherein the data is extracted from traffic

2   measurements collected at ingress routers.

1   25. The method of claim 24 wherein the traffic measurements are made

2   between an ingress link and a set of egress links.

1   26. The method of claim 25 wherein the traffic measurements are

2   collected by associating one or more destination network addresses with the set of egress

3   links.

1   27. The method of claim 26 wherein the set of egress links is identified by

2   extracting reachability information from network forwarding tables.

1   28. The method of claim 26 wherein the set of egress links is identified by

2 extracting reachability information from BGP tables.

1   29. The method of claim 26 wherein the set of egress links is identified by

2 extracting reachability information from network configuration files.

1   30. The method of claim 18 wherein the network traffic demand

2 information is derived from estimates of projected network traffic demand.

1   31. The method of claim 18 wherein the network traffic demand

2 information is derived from customer subscription information.

1   32. The method of claim 18 further comprising the step of providing an

2 interface to the data model that graphically displays the network nodes, network links and

3 network traffic calculated by the routing model.

1   33. The method of claim 18 wherein the routing model simulates the

2 OSPF routing protocol.

1   34. The method of claim 18 wherein the routing model simulates the IS-IS

2 routing protocol.